IN THE SPECIFICATION:

Please replace the following paragraphs. Additions are shown underlined and deletions are shown in ~~strikethrough~~:

On page 2, the paragraph beginning on line 12:

An example of such a soil measurement system for carrying out component analysis in real time is the prior art device disclosed in Japanese Laid-Open Patent Publication No. HEI 11-83627. The invention disclosed in this publication is a device, which analyzes components of a soil from the optical properties of the soil, and the specific structure thereof is shown in Fig. 1.

On pages 3-4, the paragraph beginning on page 3, line 27:

However, from further experiments that have been repeatedly carried out, it is known that even when the component structure of the soil is the same, there will be different spectrums of reflected light depending on the type of soil and the degree of moistness of the soil. In this regard, the distribution of the soil component, which is the measurement object inside the soil, will change depending on the type of soil, for example, as in the case where the soil includes a lot of sand and the case where there is not a lot of sand. Further, depending on the degree of moistness, the soil component, which is measurement object inside the soil, will form other compounds by means of chemical reactions and organism activity, and when analysis is carried out, the existing state of this soil component will change. Due to such causes, there will be changes in the way illumination light shines on the measurement object and changes in the reflection state.

On page 7, the paragraph beginning on line 4:

Further, a soil measurement assisting function is preferably provided to determine measurement conditions of measurement data and the like that will be used and said model, and establish such measurement conditions and model in said detecting means and said measurement information processing means. By providing this soil measurement assisting function, the measurement data and the model, which are correlated to the type and water content of the objective soil, are automatically established. Consequently, even when there are changes in the

type of soil and water content of the soil, the establishment of measurement conditions (the kind of measurement data to be used, etc.) for measuring soil properties and the establishment of the model can be carried out easily and quickly, and this makes it possible to improve the efficiency of soil measurements.

On page 8, the paragraph beginning on line 20:

Moreover, said type of soil may be calculated from a data base which, holds previous measurements in storage. Further, this data base corresponds to the "GIS data storage portion 63" in the embodiments.

On page 13, the paragraph beginning on line 3:

On the other hand, in the case where previous data of the type of soil ~~can not~~ cannot be utilized, it is possible to use the method described below which is an assisting method in an assisting device for a soil measuring apparatus, which measures properties of a soil. Namely, the assisting method prepares storage means which stores soil measurement data correlated with a model for calculating soil properties, related to optical properties of the soil, and information related to chemical components of the soil. Further, the assisting method acquires at least information related to optical properties of a measurement site; then accesses said storage means based on the acquired said information related to optical properties, and reads out a corresponding model; and then acquires information related to chemical components of the soil at a prescribed site; wherein said model is compensated based on said information related to chemical components.

On pages 16- 17, the paragraph beginning on page 16, line 27:

Now, because the supply and the like of the information correlated with the soil as described above can be accurately carried out by the soil model data base management system, which controls a related data base, such arrangement is preferred. By carrying out an updating process in order, it is possible to supply the newest information. Further, by increasing the amount

of information, it is possible to construct a data base which can be applied to various fields, and which is very convenient to use. At this time, in the case where the supplying of information to the user or the supplying the information for updating from the user is received, when a settlement function for paying a corresponding price in accordance therewith is included, this will form a business for the person executing the soil model data base management system.

On page 29, the paragraph beginning on line 13:

Further, the hole excavated by the first ground penetrating portion 31 has the same rough circular shape described above, and the lower portion (deepest portion side) of this circle is drawn by an arc, and is therefore not flat. On the other hand, as shown in Fig. 4, each of the second ground penetrating portion 32, the third ground penetrating portion 35 and the fourth ground penetrating portion 37 are positioned above a line L1 which connects the bottom surface of the first ground penetrating portion 31 and the bottom surface of the sensing portion 29. Accordingly, ~~the shape of~~ the bottom portion (deepest portion side) of the hole, excavated up to the point before the sensing portion 29, has a shape that is unchanged and continues to have a shape that can be drawn by an arc.

On page 31, the paragraph beginning on line 19:

The spectrophotometer 22 is constructed from a visible light ~~spectromeater~~ spectrometer and a near infrared light ~~spectromeater~~ spectrometer. Further, the reflected light from the soil surface that is gathered by the visible light gathering optical fiber 44 is sent to the visible light ~~spectromeater~~ spectrometer. The reflected light from the soil surface that is gathered by the near infrared light gathering optical fiber 45 is sent to the near infrared light ~~spectromeater~~ spectrometer. In this way, a structure is provided to measure the reception strength in each wavelength range.

On page 31, the paragraph beginning on line 19:

Further, each ~~spectromeater~~ spectrometer is a multichannel-type ~~spectromeater~~ spectrometer constructed from a photodiode linear array, and this makes it possible to carry out

high-speed detection simultaneously on 256 channels in the wavelength range 400nm ~ 900nm in the visual region, and 128 channels in the wavelength range 900nm ~ 1700nm in the near infrared region.

On page 58, the paragraph beginning on line 4:

First, the color of the soil from the color images (RGB) is converted into three types of information defined as brightness, saturation and hue. Next, with the brightness, saturation and hue forming an index, the soil is classified into four classifications c0 based on high organic matter soil, low organic matter soil, oxidization, and reduction soil color. Namely, from a standard soil color system, the range of soil colors of the four types described above ~~are~~ is specified by brightness, saturation and hue. Accordingly, by judging which range of types the feature quantity obtained by color converting the RGB data obtained based on the measurement data into brightness, saturation and hue belongs to, the classification of the feature quantity among the four classifications c0 can be calculated.

On page 67, in the paragraph beginning on page 66, line 20:

The work information data base 92 stores information related to the farm working method required for determining the farm working, and is an information base that provides information in accordance with a request. Further, a function is included for renewing the read in contents of required information from a network, a recording medium or the like. Further, the work information base 92 includes information related to the breed of crops required for determining the farm working. These include the breed properties information such as the crop name, breed name, germinating rate, planting quantity, growth function, the flowering, the fructification function, the resistance to disease damage insects and the like, fertilization responsivity, environmental responsivity meaning the behavior to air temperature, sunlight and the like, cultivation workability which shows the important points of the cultivation work, cultivation properties formed from the harvesting method and the like, storage/~~transportion~~ transportation properties such as ripeness, aging, density, volume, the shape and like, and the like. Further, the information related to the fertilizers is formed from the cost, effects, components, application method and the like. The

information related to the agricultural chemicals is formed from the cost, effects, components, application method and the like.

On page 67, the paragraph beginning on page 67, line 12:

On the other hand, the models 93 include a growth model, a disease damage model, a weather model and the like. The growth model is a model for predicting the growth of the crop in agricultural units, and if a description of rice is given as an example, the model predicts the stalk number, grain producing period, maturation period, stalk length, grain length, grain number and the like. Further, the growth model also stores information on the actual results of crop growth from the start of predictions to the present point in time for each farmland. The disease damage model calculates the occurrence probability of disease, disease damage insects, and weeds in agricultural units. Further, after the occurring of the disease, disease damage insects, and weeds the model predict the ~~spreed~~ spread of them and calculate the predicted damage. In this regard, the term "damage" refers to the percentage of the crop that ~~can not~~ cannot be shipped due to disease, disease insects, and weeds. Further, the disease model stores the actual occurrence results of previous causes and extents of diseases and weeds for each farmland.